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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/924,021	08/07/2001	Tomoaki Ito	08228/017001	3025

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EXAMINER	
SIEFKE, SAMUEL P	
ART UNIT	**PAPER NUMBER**
1743	

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/924,021	ITO ET AL.	
	Examiner	Art Unit	
	Samuel P. Siefke	1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 May 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6 and 14-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 14-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

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DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-6,14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 05080009 (Aoki) in view of JP 09086835 (Yoshida).

Aoki teaches a method for measuring an inorganic carbonic acid (carbonate ion) concentration in an aqueous system by using an electric conductivity sensor with a gas permeation membrane. The carbonic acid density measurement approach of this invention separates the passage of a gas decollator by the gas permeable membrane. The test water which added the acidic solution to one passage of this gas decollator, and divided the carbonic acid in test water into it as carbon dioxide gas is circulated. It is made to react with the carbon dioxide gas which the alkali solution was circulated to the passage of another side, and penetrated the gas permeable membrane of a gas

decollator, and the carbonic acid concentration in test water is measured by measuring carbon dioxide gas and the conductivity of the alkali solution which reacted on the lower stream of a river of the passage of another side. If an acidic solution is added to test water, the carbonic acid in test water will be in the condition of carbon dioxide gas. It reacts with the alkali solution with which this carbon dioxide gas penetrates a gas permeable membrane, and flows the passage of another side, and the conductivity of an alkali solution changes. The variation of conductivity is determined by the amount of the carbonate ion which carbon dioxide gas reacts with an alkali solution, and generates. Therefore, the carbonic acid concentration in test water can be measured by measuring change of the conductivity of an alkali solution with a conductivity meter. While driving 1st liquid-sending pump 2A and letting test water 3 flow, 2nd liquid-sending pump 2B is driven, it lets an acidic solution 4 flow, both liquid is mixed, and it sends into one passage 1B of the gas decollator 1. A sulfuric acid (H2SO4), perchloric acid (HClO4), a nitric acid (HNO3), a hydrochloric acid (HCl), etc. are used for the acidic solution 4 added to test water 3. Although carbonic acid (H2CO3) is fusing in test water 3, if the above acidic solutions 4 are mixed for this carbonic acid, carbon dioxide gas (CO2) will occur. Thus, while the carbon dioxide gas which occurred is flowing from the upstream of one passage 1B of the gas decollator 1 to the downstream, only carbon dioxide gas penetrates gas permeable membrane tube 1A, and it flows in passage 1C of another side. Aoki field of the invention relates to a method of evaluating the engine performance of an anion exchange resin used with ion exchange units.

Aoki does not teach evaluating the performance of an anion exchange resin.

Yoshida teaches evaluating the performance of an anion exchange resin accurately by passing a performance evaluation water through a regenerated anion resin and testing for the leaked anion. Yoshida teaches calculating the MTC value of the anion exchange resin in order to provide the ion exchange capacity of the anion exchange resin so that an estimate of degradation can be estimated. Yoshida specifically states that evaluating an engine performance of an anion exchange resin used with the ion exchange unit which process the water containing an ion component, and a condensate demineralizer especially installed in condensation systems. Performance evaluation approach of the anion exchange resin used with the ion exchange unit of Yoshida lets performance evaluation water flow to the anion exchange resin which is regenerated, and is characterized by presuming the MTC value of the anion exchange resin based on the measured value which is measured and obtained by the amount of leaked (resin degradation, exhaustion or resin capacity) in this performance evaluation water. Yoshida measures the leaked anions by an ion chromatography analysis (page 8). It is well known that an ion chromatography analysis is an equivalent to an electric conductivity senor with a gas permeation membrane because they both are capable of measuring specific ions. Therefore, it would have been obvious to one having an ordinary skill in the art to use the electric conductivity senor with a gas permeation membrane of Aoki to evaluate the performance of an anion exchange resin because the concentration of inorganic carbonic acid can be directly measured in an aqueous system and the conductivity sensor is a well known equivalent to ion chromatograph analysis.

With respect to the limitations of measuring the inorganic carbonic acid at the inlet to the anion exchange resin, it would have been obvious to one of ordinary skill in the art to measure at the inlet because it would provide a baseline comparison to the sample measured at the outlet.

Response to Arguments

Applicant's arguments filed 5/16/05 have been fully considered but they are not persuasive. Applicant argues, "there exists no motivation to modify the prior art to include the gas permeable membrane and electric conductivity sensor of Aoki to measure an inorganic carbonic acid concentration." It has been stated that a gas permeable membrane coupled with an electric conductivity sensor is equivalent to an ion chromatography analyzer of Yoshida. Yoshida is basically measuring the exhaustion of an anion resin by measuring the leaked ions by an ion chromatography analyzer. It is well known in the art that a conductivity sensor can measure ions in a solution and the gas permeable membrane provides for the selectivity of the specific ion of interest. Therefore it would have been obvious to one having an ordinary skill in the art to use the electric conductivity senor with a gas permeation membrane of Aoki to evaluate the performance of an anion exchange resin because the concentration of inorganic carbonic acid can be directly measured in an aqueous system and the conductivity sensor is a well known equivalent to ion chromatograph analysis.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel P. Siefke whose telephone number is 571-272-1262. The examiner can normally be reached on M-F 7:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on 571-272-1700. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sam P. Siefke

Jill Warden
Supervisory Patent Examiner
Technology Center 1700

August 5, 2005